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## Navy Researchers Recognized by White House for their Efforts in Support of Operation United Assistance in Liberia

Story by Doris Ryan, Naval Medical Research Center Public Affairs



President Barack Obama delivers remarks on the progress made to date and the next steps in our response to the Ebola outbreak in West Africa, in the Eisenhower Executive Office Building South Court Auditorium, Feb. 11, 2015. (Official White House Photo by Lawrence Jackson)

SILVER SPRING, Md. – President Barack Obama recognized two researchers from the Naval Medical Research Center (NMRC), along with representatives from the other services and organizations, for their efforts in supporting Operation United Assistance (OUA) in West Africa at a press conference, February 11. Cmdr. Guillermo Pimentel, Deputy Director of NMRC's Biological Defense Research Directorate, and Lt. Andrea McCoy, Division Officer of the Operations Department, in the same directorate, represented the Navy.

The President began by saying, "Last summer, as Ebola spread in West Africa, overwhelming public health systems and threatening to cross more borders, I said

that fighting this disease had to be more than a national security priority, but an example of American leadership. After all, whenever and wherever a disaster or a disease strikes, the world looks to us to lead. And because of extraordinary people like the ones standing behind me, and many who are in the audience, we have risen to the challenge."

The Ebola epidemic took NMRC staff to one of the hardest hit countries in the region, Liberia, where two Navy mobile laboratory teams were deployed.

Pimentel was one of a two member advanced team deployed September 21, 2014, to scout locations, determine

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## NMRC Commanding Officer's Message



Last month the NMRC family welcomed back some of our amazing Sailors from their deployment to Liberia. These individuals were part of two mobile laboratory teams aiding Operation United Assistance in the efforts to combat the West African Ebola epidemic. One lab was set up in remote Bong County and the other was co-located with the World Health Organization's Ebola Treatment Unit on Bushrod Island, Monrovia. The work these Sailors performed was a great representation and extension of the dynamic work we do here at NMRC and at our overseas labs. They worked exceptionally well in a complex environment and interacted tremendously with other agencies and organizations. I am not the only individual who is proud of the work they did. The Commander in Chief, President Barack Obama, recently held a news conference to thank all those who have worked so diligently during this crisis. CDR Guillermo Pimentel and LT Andrea McCoy were invited onstage to represent the U.S. Navy, and the President specifically recognized each of them and praised their efforts. I can't tell you how honored we are to have two members of our enterprise singled out so prominently. Of course, they would both

immediately tell everyone that they were representing the other Sailors who deployed with the labs and everyone else throughout the Navy who worked so hard to support the effort. That is very true. Congratulations to you all.

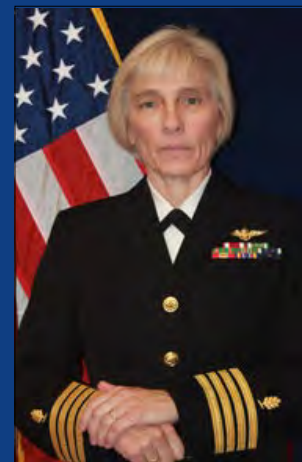
The Navy mobile laboratory at Island Clinic in Monrovia processed its last sample, January 25, 2015. We expect the team supporting that lab to return from Africa (with a short 21 day stop for monitoring) next week. The other laboratory in Bong County will remain open until early March. We are looking forward to getting everyone home.

NMRC Commanding Officer sends,  
John. W. Sanders III, CAPT, MC, USN

## NAMRU-San Antonio Commanding Officer's Message

Two months into the New Year and I am fast approaching the finish line of my term as Commanding Officer for NAMRU-SA. It is a time of reflection on the achievements of the command, and a heralding of what's to come under new leadership. During my tenure our scientific teams have been prolific in the delivery of innovative products to sponsors and clients with substantial increases in products per project and other types of tangible return on investment. Highlights of the past two years include awards for projects to improve craniofacial wound management and infection control.

With an interdisciplinary team of biomedical engineers, cell biologist, immunologist, mechanical engineers, biomaterials experts, and dentist, our researchers developed a novel approach to creating biocompatible nanofibers to create an antimicrobial wound dressing. NAMRU-SA scientists contributed to the fight against drug-resistant "superbugs" with unique projects resulting in patents filed for a laser-induced photo-acoustic method to destroy bacteria and a portable and rechargeable field-ready ozone sterilizer. The lab's shock and resuscitation research is advancing our understanding of the molecular aspects of the immune response to shock and the long-term effects in warfighters. These investigations will aid us in understanding why certain therapies work and others don't.



NAMRU-SA, as the BUMED lead agent for mercury abatement, developed several novel approaches to ensure that 99 percent of mercury associated with medical or dental treatments is captured before entering any waste water stream. The redesigned composite amalgam filter will be an inexpensive, effective way to significantly reduce mercury burden into the public waterways. As I set the stage for my departure, my eyes turn to 2015 and the strategic collaboration and interdisciplinary culture that will continue to shape how we work—and how we work together. Creating a collaborative environment will remain at the forefront of my priorities and I trust it will be a hallmark of this laboratory for years to come. The Tri-Service Laboratory continues to be a significant asset to our research and NAMRU-SA has active collaborations with universities, industry, and across the DoD services. The lab is well positioned to support the force's medical research needs with the greatest effectiveness for every dollar spent, while advancing scientific excellence in all efforts we undertake.

As I depart for my new position as Commanding Officer of the Naval Health Research Center, San Diego, I am honored to have served with an exceptionally brilliant and highly motivated staff that embraces a culture of collaboration, and who are driven to investigate and find research solutions to the critical needs of the warfighters and the clinicians who treat them.

NAMRU-San Antonio Commanding Officer sends,  
Rita G. Simmons, CAPT, MSC, USN



# Navy Researchers Recognized by White House for their Efforts in Support of Operation United Assistance in Liberia

(continued from page 1)

effective field protocols, and set up the laboratories. He met with Joint Forces Command to clarify the mission and expectations for the mobile laboratories. He also worked closely with representatives from the World Health Organization, U.S. Centers for Disease Control and Prevention, Defense Threat Reduction Agency, and the Liberian Ministry of Health to establish a system to transport samples to the laboratories, a critical step in supporting disease surveillance and identifying new Ebola cases and outbreak hot spots.

The President also pointed out that Pimentel lead a team of Navy Microbiologists to set up the mobile labs.

“When the Ebola outbreak was getting out of control in West Africa, I was hoping to have the opportunity to deploy our mobile labs. I knew our Sailors would make a difference. I believe our Sailors saved hundreds of lives and the NMRC mobiles labs were a game changer. I am extremely proud of this mission and our Sailors’ performance was flawless,” said Pimentel.

While the advance team was away, the team back in Maryland quickly assembled the necessary equipment to support the mission for the first 90 days.

McCoy, First Officer in Charge, Island Clinic, Monrovia, Liberia, and her team prepared critical equipment and supplies. Before deploying, the team spent seven days of intense laboratory training practicing the standard operational procedures they would be using in the field, which was specific to Ebola detection. McCoy was among the first to begin conducting Ebola testing.

The laboratories deployed September 25, 2014, and by October 3, 2014, were fully operational and receiving samples.

“When patients thank you and sing praises because they know you are the one who called their blood ‘negative’; when local teens in the streets stop to salute your vehicle because they see you are part of OUA; when Liberian healthcare workers ask who they can talk to, to keep you from having to go home; it’s an extraordinary



*President Barack Obama delivers remarks on the progress made to date and the next steps in our response to the Ebola outbreak in West Africa, in the Eisenhower Executive Office Building South Court Auditorium, Feb. 11, 2015. (Image computer screenshot)*

and rewarding feeling. I couldn’t be more proud of my teammates for all we accomplished,” said McCoy.

The President announced the withdrawal of almost all the American troops sent to West Africa to help contain the spread of Ebola. He also outlined new steps aimed at stopping the disease now that the crisis has eased.

“We are also here to mark a transition in our fight against this disease – not to declare mission accomplished, but to mark a transition. Thanks to the hard work of our nearly 3,000 troops who deployed to West Africa, logistics have been set up, Ebola treatment units have been built, over 1,500 African health workers have been trained, and volunteers around the world gained the confidence to join the fight. We were a force multiplier,” said the President.

The President announced that by April 30, all but 100 will remain to help support

the ongoing response. He noted that the mission was not done, and as the military response is winding down, the civilian response is expanding.

“I am very proud Cmdr. Pimentel and Lt. McCoy were recognized at the White House. They are very deserving. Of course, we all understand they are representing a lot of people from throughout the NMR&D enterprise who have contributed so much to this effort. Everyone should be very proud of their work and this recognition,” said Capt. John Sanders, commanding officer, Naval Medical Research Center.

# NAMRU-6 Hosts the Chief of Navy Operations During Visit to Peru

*Story courtesy of NAMRU-6 Public Affairs*

LIMA, Peru - Adm. Jonathan W. Greenert, the 30<sup>th</sup> Chief of Naval Operations (CNO) recently visited the U.S. Naval Medical Research Unit No. 6 (NAMRU-6) as part of his regional engagement with the navies of Chile, Peru and Colombia.

As part of the CNO's visit with partner militaries, NAMRU-6 had an opportunity to demonstrate U.S.-Peru collaborative efforts in disease surveillance and show off its world class laboratory facility in Lima.

The visiting party included Mrs. Darleen Greenert; members of the CNO's advisory team; the Peruvian CNO, Admiral Edmundo Deville; the Peruvian Director General of Naval Personnel, Vice Admiral Manuel Vascones; the Peruvian Surgeon General, Rear Admiral Rafael Zariquiey; and the Peruvian Naval Hospital Commander, Rear Admiral Hugo Gallo.

During the visit NAMRU-6 Commanding Officer Capt. Kyle Petersen briefed the visitors on the U.S.-Peru relationship from the founding of NAMRU-6 in 1983; the focus of the three overseas NAMRUs on tropical medicine product development and regional biosurveillance and NAMRU-6's manpower and budgetary data.

Greenert toured NAMRU-6's Parasitology laboratories where he learned from Lt. Cmdr. Ashley Jackson about molecular diagnostic tools for the parasite leishmaniasis and the world class malaria microscopy course provided to regional partner nations.

This was followed by molecular virology where Lt. Robert Hontz



*Adm. Jonathan W. Greenert, the 30th Chief of Naval Operations recently visited NAMRU-6 as part of his regional engagement with the Navies of Chile, Peru and Colombia. Admiral Greenert examines a campylobacter specimen. Campylobacter, a common cause of diarrhea, is one targeted pathogen in the NAMRU-6 pre-clinical vaccine program. (Photo courtesy of NAMRU-6 Public Affairs)*

taught the CNO about full genome sequencing for pathogen discovery, PCR methods for influenza and dengue characterization and testing of new molecular tools for the field like the filmarray, and DTRA 24 month challenge devices.

In the bacteriology lab Greenert got to see efforts in antibiotic resistance, diarrheal vaccines and leptospirosis diagnosis from Lt. Nathaniel Reynolds.

Greenert then spent time with NAMRU-6 enlisted members HM2 Jose Jimenez and HM2 Logan Ortlieb who described their work in biomedical repair and inventory management and the BUMED Health Facility Planning Officer Lt. Lana Furnish who described ongoing construction projects.

The tour ended with displays of entomological research on mosquitoes and sandflies by Lt. Cmdr. Craig

Stoops and a tour of the vivarium by Staff Sgt. Timothy Hair and Maj. Joseph Royal where all the NAMRU-6 preclinical work on diarrhea and malaria vaccines is carried out.

Greenert was interested in methods to protect and diagnose forward deployed Navy and Marine Corps members from dengue and malaria, particularly with the increased operational tempo in tropical parts of SE Asia; and, in NAMRU-6 efforts to bring the newest and most advanced laboratory technology to Latin America as a capacity building effort.

The CNO offered praise to Petersen and the NAMRU-6 crew on their outstanding scientific and diplomatic efforts in Peru on behalf of the U.S. Navy and thanked everyone for an informative tour.



## US Ambassador to Cambodia Visits AFRIMS/NAMRU-2 and USAID Malaria Field Sites

*Story courtesy of NAMRU-2 Public Affairs*

PHNOM PENH, Cambodia - In support of Cambodian malaria week activities, Lt. Cmdr. Dustin Harrison, from the U.S. Naval Medical Research Unit No. 2, escorted U.S. Ambassador to Cambodia William Todd, and United States Agency for International Development (USAID) Deputy Director Sean Callahan, to Anlong Veng district located in Oddar Meanchey province in Northwest Cambodia, January 14 – 16.

They visited the joint Armed Forces Research Institute of Medical Sciences (AFRIMS) - NAMRU-2 malaria drug treatment field site and USAID malaria control projects.

During the visit, the ambassador had a chance to see the patient enrollment and treatment process and spoke with a few of the patients.

When asked about the quality of treatment one patient said, “I feel very fortunate to be able to be here and I am treated very well. I am very thankful that America is helping me and my family.”

Later, Todd had the opportunity to check out the laboratory and get a brief lesson on the day-to-day work.

“I think the work the USG is doing in malaria treatment and control in Cambodia is amazing,” said Todd. “The lab technicians and hospital staff members were very helpful in helping me understand their work. I was humbled to learn how our support is saving and improving lives.”

The Army-Navy study is investigating the use of atovaquone-proguanil alone or with artusenate to treat falciparum malaria. The study will compare results from an area with artemisinin resistant



*U.S. Ambassador William Todd distributes bed nets at a Malaria Week field site in Oddar Meanchey Province. (Photo courtesy of USAID)*

malaria, Anlong Veng and one without Kratie. Since December 15, 2014, the Anlong Veng site has enrolled more than 25 patients.

“While we have faced a few setbacks along the way, we are enthusiastic about how the study is progressing,” said Harrison.

The Ambassador later visited several communes to distribute bed nets and to talk about malaria.

The site visit was used to promote the USG health sector development mission, while also explaining the growing importance the U.S. Department of Defense has placed on global health engagement.

According to an October 2014 report from the Center for Strategic and International Studies, the U.S. Department of Defense has, “increased its outreach and use of interagency liaisons, seeking to better collaborate with civilian agencies and partner country militaries. It has begun to tackle the challenging yet critical task of evaluating effectiveness.”

NAMRU-2 has become a major part in achieving these goals.

# Navy Extremity Tourniquet Evaluation helps Standardize Tourniquets

Story by Roy E. Dory, MS



NAMRU-SA evaluating a tourniquet designed to control arterial hemorrhage caused by traumatic limb injury. (Photo courtesy of NAMRU-SA Public Affairs)

SAN ANTONIO - Analysis of casualties early in the wars in Iraq and Afghanistan revealed extremity hemorrhage to be a leading cause of potentially survivable death on the battlefield.

Traditionally, tourniquets designed to control hemorrhage were used by special operation forces and some conventional forces on a unit basis; however, in response to compelling statistics, the U.S. Central Command issued a directive in 2005 that all deployed military persons must carry an extremity tourniquet. Since implementation of the directive, a significant reduction has been seen in the number of deaths attributed to hemorrhage at the extremities, across services.

Relatively simple in design, numerous tourniquets are currently on the market.

Operational testing of candidate models is critical to ensure U.S. warfighters carry the most effective devices. A joint services Tourniquet Working Group was established in 2010 to standardize safety, efficacy and operational requirements for extremity tourniquets.

The engineering team in the Expeditionary and Trauma Medicine Department at the Naval Medical Research Unit-San Antonio (NAMRU-SA) has taken a leading role in implementing those joint consensus requirements in ongoing device evaluations.

NAMRU-SA engineers recently began evaluating two newly developed tourniquets, designed to control arterial hemorrhage caused by traumatic limb injury. The test team is currently recruiting participants with both medical and

non-medical backgrounds to apply the tourniquets to instrumented mannequin limbs in simulated operational conditions.

Pressure sensors embedded in the mannequin limbs indicate when sufficient pressure is generated by the tourniquets to fully occlude blood flow. The performance of the devices is gauged by the amount of time it takes to achieve occlusive pressures, and the participants also provide valuable feedback regarding the strengths and weaknesses of the tourniquet designs.

The U.S. Army funded project will generate quantitative and qualitative performance data that will help standardize tourniquets used across services. The outcomes of the assessment will aid the warfighter and ensure the fielding of only the most effective tourniquet systems.



# NMRC Hosts Presidential Management Fellow

Story by Mikelle D. Smith, Naval Medical Research Center Public Affairs

SILVER SPRING, Md., -- Naval Medical Research Center's (NMRC) Office of Partnership and Business Development (OPBD) led by Dr. Todd Ponzio, began hosting an Office of Personnel Management (OPM) Presidential Management Fellow (PMF) in January.

The Presidential Management Fellows (PMF) Program is directed by OPM and each year candidates apply for the prominent title of PMF finalists. Selected finalists are eligible for appointment as Fellows.

Dr. Lindsey Saul, the PMF with NMRC, received her Ph.D. in Social and Behavioral Health from Virginia Commonwealth University and has conducted research on attitudes toward tissue donation, as well as issues related to informed consent.

"I was interested in NMRC because I am a researcher by training," said Saul. "I knew a little bit about technologies and intellectual property through my experience working at Walter Reed National Military Medical Center [WRNMMC] with auditory fitness for duty; however, I knew this rotation through NMRC would strengthen my understanding of the field and help me understand the translational side of research within the military/government context."

She went on to add, "Being appointed as a PMF to the Department of Defense [DoD] is a fantastic opportunity to progress my career in military health," said Saul. "The PMF program trains fellows to become leaders in whatever field they decide to pursue. For me, the PMF program is the next step in my career as I've always wanted to be in a leadership role in the federal government, having an impact on and influencing policy."

NMRC's OPBD focuses on strategic partnerships and acts as the bridge between the business, legal, and science/research communities for the purpose of transferring military technologies and inventions to the wider public.

"With Dr. Todd Ponzio's assistance and guidance, I am developing an algorithm



*Dr. Lindsey Saul, the PMF with NMRC, received her Ph.D. in Social and Behavioral Health from Virginia Commonwealth University and has conducted research on attitudes toward tissue donation, as well as issues related to informed consent. (Photo taken by Mikelle D. Smith, Naval Medical Research Center Public Affairs)*

to identify Navy Medicine's most promising technologies for commercial partnership," said Saul. "[I am gaining a] general understanding of the field by systematically and empirically scoring inventions in BUMED's comprehensive intellectual property portfolio. I am [also] facilitating the execution of Defense Health Agency's [DHA] Guidance for harmonization of technology transfer across the services. The execution of this guidance has a direct impact on the processes and collaborations for my home agency, DHA. In general, all work I am doing for my rotation at NMRC is closely tied to innovation as it is an integral part of the pathway that successful, commercially relevant innovations can flow through. This rotation has piqued my interest in the technology transfer field and could be a potential career track."

The PMF program started in 1977 to give exceptional graduates from various academic fields the pathway to consider federal service. The fellowship offers PMFs the chance to rotate through multiple offices within the DoD, as well as in other

agencies within the federal government.

To become a PMF, Saul participated in an arduous, multi-phase process. The process required patience and endurance, but also gives her the opportunity to demonstrate her leadership ability and potential.

Saul's direct supervisor at NMRC, Dr. Todd Ponzio, spoke of her diligence in being part of the OPBD team, leveraging Saul's intellectual stamina to develop a systematic approach to portfolio analysis.

"I have been exceptionally impressed by Dr. Saul's ability to rapidly absorb and assimilate a complex field," said Ponzio. "Her time here has been a true asset to the enterprise."

# NAMRU-San Antonio Discusses Translational Biomedical Engineering at BMES

Story by Flisa Stevenson, NAMRU-SA Public Affairs

SAN ANTONIO – The Biomedical Engineering Society (BMES) hosted their annual conference in San Antonio and featured Naval Medical Research Unit-San Antonio (NAMRU-SA) researchers in an engaging panel discussion entitled, “Overcoming Challenges and Obstacles for Clinical Translation: From Bench to Bedside,” Oct 22 – 25, 2014.

NAMRU-SA was invited to provide a military perspective as part of the new session at BMES on translational research. This research intends to make findings from basic science useful for practical applications that move from the bench to bedside or laboratory experiment through clinical trials to point of care patient application.

Dr. Mauris N. DeSilva, nanomaterials expert in the Maxillofacial Injury and Disease Department, and Mr. Roy E. Dory, biomedical engineer in the Expeditionary and Trauma Medicine Department, discussed NAMRU-SA's experience, successes and challenges in military-related translational biomedical engineering.

DeSilva's and Dory's presentation illustrated NAMRU-SA's unique multidisciplinary and collaborative environment where the focus is on translational research using existing and novel devices, and technologies to improve wounded warrior outcomes.

Each member of the panel stressed the importance of engaging with the end-user and the regulatory agencies at the beginning of the research, and product development process.

“At NAMRU-SA we begin our research by understanding the needs of the injured, along with close discussions



Dr. Mauris N. DeSilva (left), nanomaterials expert in the Maxillofacial Injury and Disease Department, Craniofacial Health and Restorative Medicine Directorate, and Mr. Roy E. Dory (right), biomedical engineer in the Expeditionary and Trauma Medicine Department, Combat Casualty Care Directorate. (Photo courtesy of NAMRU-SA Public Affairs)

with the surgeons who require novel technologies and products for optimizing the treatment of injured warfighters,” said DeSilva. “Being located on Joint Base San Antonio, next door to the San Antonio Military Medical Center (SAMC), provides Navy researchers direct communications with SAMC and other military hospitals to understand what warfighters need, and the current challenges associated with treating injured service members”.

The panel also discussed the challenges associated with not only translating research and ideas from the bench to bedside, but also from the bench to the battlefield, especially for medical devices and treatments used in Role 1 field care.

“There are some fundamental challenges associated with Role 1 care,” said Dory. “These include physical constraints on the size and weight available in individually issued first aid kits and medical field bags, as well as unique environmental conditions that must be considered both at the point of care and during patient transport.”

DeSilva added, in order technology to successfully transition from the research lab to the fleet, it's critical to engage with the end-user to understand how and in what conditions medical devices, and treatments will be used.

“There can be a dramatic difference between how technologies perform

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# NAMRU-Dayton and NAMRU-San Antonio to Investigate Laser Scatter on Warfighter Performance

Story by Dr. Mike Reddix, Naval Medical Research Unit Dayton



*Dr. Mike Reddix and Lt. Cmdr. John Bradley traveled to NAMRU-SA for a project meeting on an Office Secretary of Defense sponsored "Laser Dazzle" project. NAMRU-D is collaborating with NAMRU-SA and U.S. Air Force Research Laboratory to model effects of laser scatter on warfighter performance. (Photo courtesy of NAMRU-SA Public Affairs)*

DAYTON, Ohio - The Naval Medical Research Unit-Dayton (NAMRU-D) and the Naval Medical Research Unit San Antonio (NAMRU-SA) are partnering with the Air Force Research Laboratory's Optical Radiation Branch and the United Kingdom's Ministry of Defense, Defense Science and Technology Laboratory, to conduct research to augment and validate predictive models of laser glare and its impact on human visually-mediated performance.

This work is especially important given the increase across the services and the Federal Aviation Administration (FAA) in aircraft cockpit laser illumination events.

These less-than-lethal exposures to non-ionizing radiation pose a safety-of-flight risk, especially during nighttime operations and critical phases of flight. NAMRU-D and

NAMRU-SA will develop protocols to assess interocular scatter of coherent light sources that are propagated across ground and water operating environments.

Improved laser scatter models will augment international safety standards that currently only address laser eye damage and will improve the understanding of non-lethal laser exposures on human performance, and advise low-intensity threat laser eye protection development efforts.

The research will vary background ambient luminance, visible laser wavelength, laser beam angle of incidence, laser power, and target luminance and contrast in order to accurately characterize interocular scatter and its relationship to operationally-relevant tasks.

This collaborative research effort stems

from an Office of Secretary of Defense sponsored "Laser Dazzle" project meeting, which two NAMRU-D researchers attended, December 11-12, 2014, in San Antonio.

Dr. Mike Reddix, NAMRU-D senior research psychologist; Lt. Cmdr. John Bradley, NAMRU-D aerospace optometrist; Lt. Mike Tapia, NAMRU-D aerospace physiologist; and Mr. Roy Dory, NAMRU-SA biomedical engineer, will coordinate range research to be conducted at the Tri-Service Research Laboratory, Joint Base San Antonio, and he will lead maritime tests at the Naval Surface Warfare Center Crane, Lake Glendora Test Facility.

## Returning from Liberia Deployment

Photo taken by Mikelle D. Smith, Naval Medical Research Center Public Affairs



January 22, 2015 NMRC welcomed back Sailors who recently returned from a 90-day deployment to Liberia as part of two NMRC mobile laboratory teams aiding in the efforts to fight the West African Ebola epidemic. Pictured (Left to right) are Lt. James Regeimbal, Lt. Christina Farris, Lt. Jose Garcia, Lt. Cmdr. Michael Gregory and HM1 Yusupha Kah

## NAMRU-San Antonio Discusses Translational Biomedical Engineering at BMES

(continued from page 8)

in a controlled lab environment, in the hands of the research team, and how they perform in the field, and it's critical that we understand those challenges to ensure the technologies remain effective, reliable, and operationally sound in the field," said Dory.

The Maxillofacial Injury and Disease Department conducts research on the microbiology, immunology, etiology, diagnosis, and treatment of medical and dental diseases, especially infections and biofilms that are resistant to currently used antibiotics.

Novel laser-acoustic methods and nanoparticle technologies are being studied to increase the armamentarium available to clinicians

for the treatment of resistant infections.

The Expeditionary and Trauma Medicine Department conducts research focused on the protection, resuscitation, and stabilization of combat casualties at frontline points of care in the combat theater.

The Trauma medicine group focuses on primary and pre-clinical research for the development and optimization of drug products and advanced therapies for the treatment of hemorrhagic shock.

The Expeditionary Medicine group works to identify and effectively mitigate stressors and improve survivability through the evaluation of products and agents that deliver

capabilities to meet rapidly evolving expeditionary warfare requirements.

When it comes to practical applications emerging from research focused on the critical care needs of warfighters, NAMRU-SA's capabilities and translational approach to research and development are well positioned to improve wounded warrior outcomes.

NAMRU-SA's mission is to conduct medical, craniofacial, and biomedical research, which focuses on ways to enhance the health, safety, performance and operational readiness of Navy and Marine Corps personnel and addresses their emergent medical and oral/facial problems in routine and combat operations.



## R&D Chronicles

# Navy Medicine's Scientific Foundation

*The Establishment of the Medical Research Institute*    **Part V**

*By Andre B. Sobosinski, Historian, Bureau of Medicine and Surgery*

"I do not know what you have heard about NMRI as to its reputation among those who can evaluate research. From what I have heard it appears that it has already attained a stature in the scientific world and has made contributions to research in its short life of which a much older institution might be justly proud."

**--Capt. E.G. Hakansson, Commanding Officer, Naval Medical Research Institute (NMRI), March 11, 1946.**

Commissioned Navy Day, October 27, 1942, in Bethesda, Maryland, the Naval Medical Research Institute (NMRI) could be called one of the most innovative organizations ever established in the annals of Navy Medical Department history.

Throughout World War II, its crew of scientists and researchers—some of the most brilliant minds in the military—embarked on an ambitious mission of "comprehensive research" relating to all aspects of military and especially naval problems. Medical research was not unknown to the Navy at the beginning of World War II.

The inter-wars years saw a vast array of pioneering medical research conducted at the Naval Medical School in Washington, D.C; the Submarine Base, New London, Connecticut; the Experimental Diving Unit, Navy Yard, Washington, D.C., and aviation bases at Pensacola and San Diego.

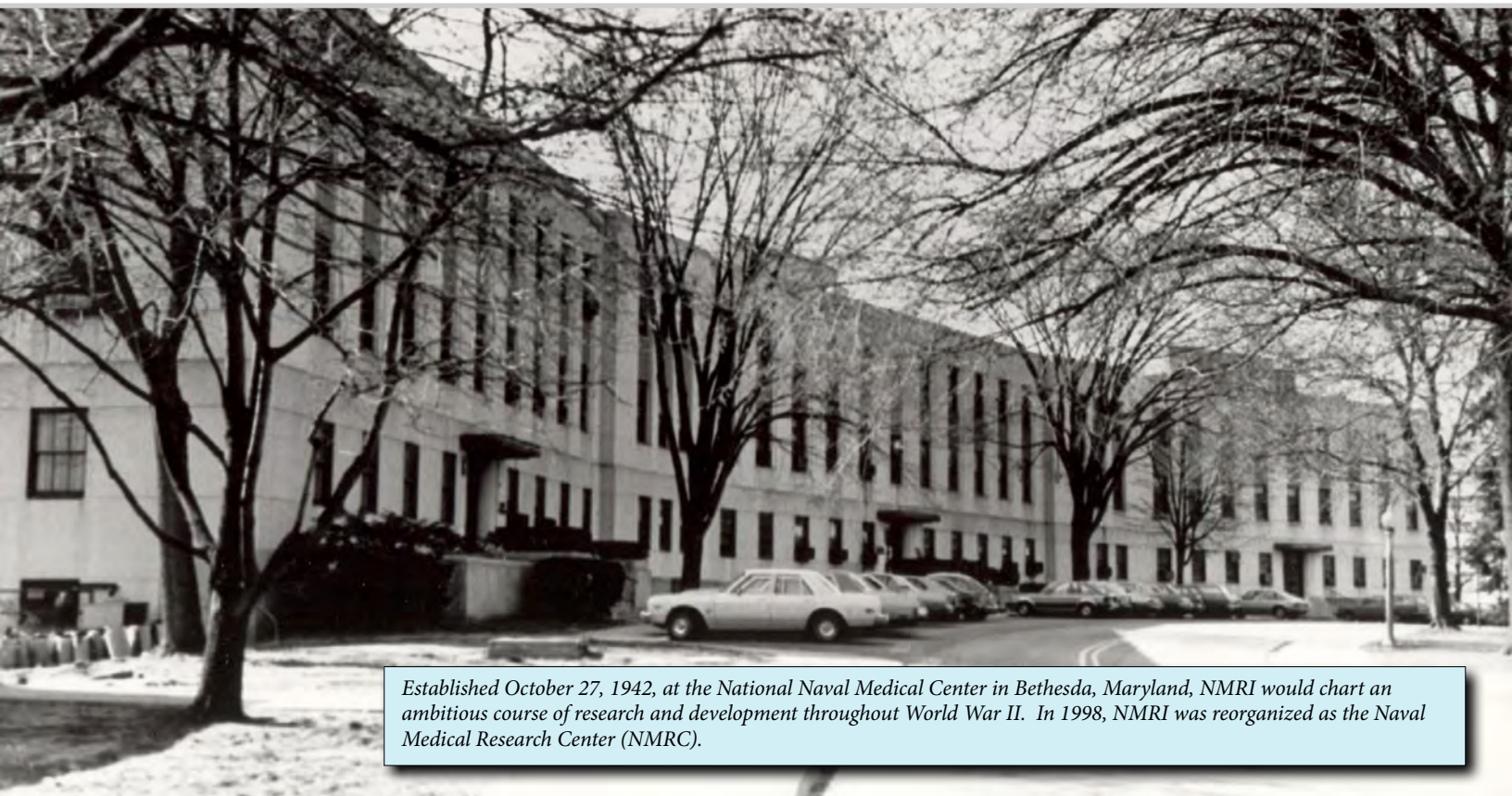
During these years Navy medical personnel would unlock mysteries like decompression sickness, anti-G forces, and help lead the development of liquid plasma, immunization of tetanus typhoid and the means for combating heat stress.

Plans for the establishment of a special Research Laboratory to oversee and direct

Navy Medical Research efforts had existed since the 1930's and can be considered an uber-collaborative effort that benefited 'from the perfect storm of need (the impending war), influential support (President Roosevelt) and the availability of a prime location (the new Naval Medical Center in Bethesda, Maryland.)

NMRI originally consisted of 13 officers, 50 enlisted men and one civilian. Capt. (later Rear Adm.) William Mann was selected to take the helm as the first commanding officer. Mann would best be known as the founder of the "field medical school" concept decades earlier.

*(continued on page 13)*



*Established October 27, 1942, at the National Naval Medical Center in Bethesda, Maryland, NMRI would chart an ambitious course of research and development throughout World War II. In 1998, NMRI was reorganized as the Naval Medical Research Center (NMRC).*

# NAMRU-3 Celebrates 69<sup>th</sup> Anniversary

*Story courtesy of NAMRU-3 Public Affairs*

CAIRO - NAMRU-3 was formally established by the U.S. Navy and began operations in Cairo, Egypt, January 15, 1946. Prior to that time, 10 active duty Naval officers and Hospital Corpsmen participated in the U.S. Typhus Commission in Cairo.

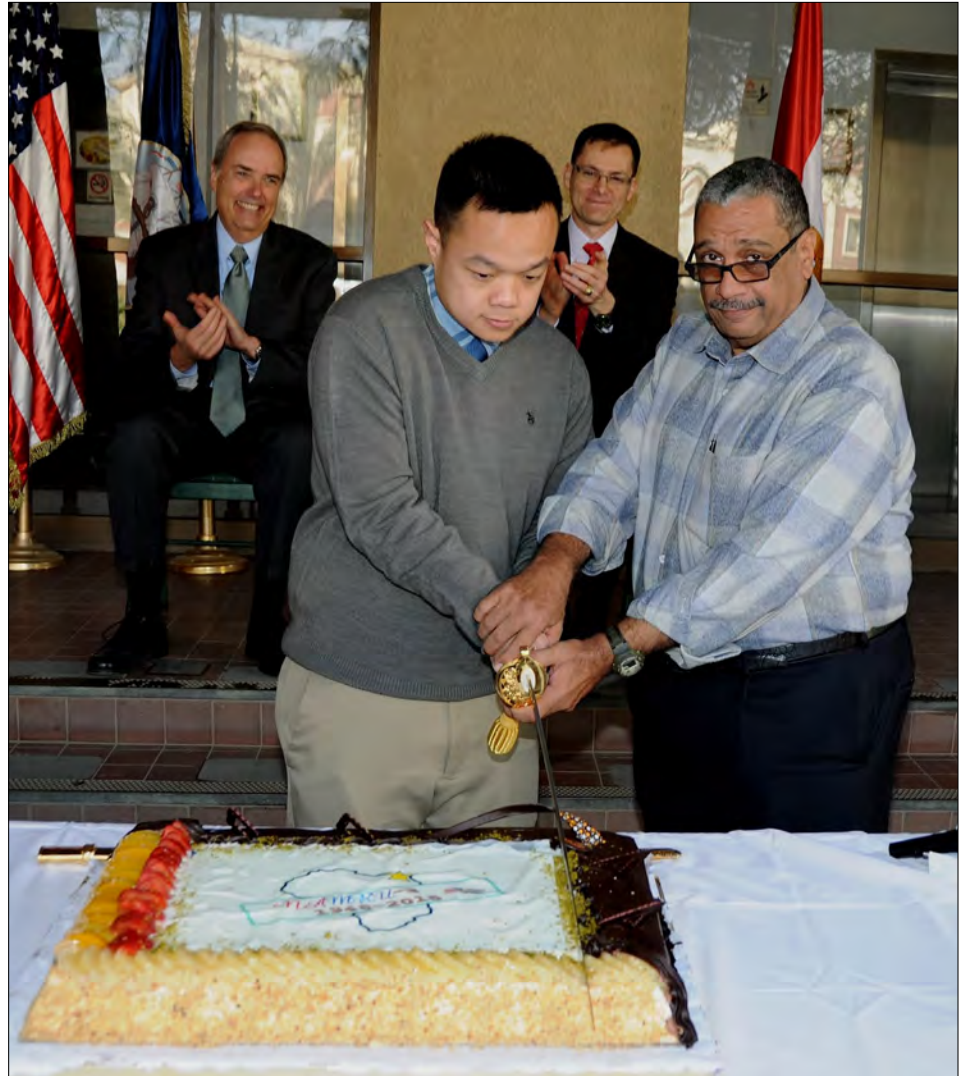
The laboratory traces its origins to 1942, when American scientists and technicians began working with Egyptian physicians at the Abbassia Fever Hospital in Cairo under the auspices of the United States Typhus Commission established by President Franklin D. Roosevelt. When the threat of typhus passed, the Egyptian Government requested a U.S. presence to carry on the infectious disease research already begun.

The U.S. Navy Bureau of Medicine and Surgery stepped up to establish the U.S. Naval Medical Research Unit No. 3 (NAMRU-3), receiving a renewable lease on three acres of land adjacent to the Abbassia Fever Hospital. NAMRU-3 took over ten structures, converting them into laboratory, administrative, and public works spaces.

Over the past 69 years, NAMRU-3's work spaces evolved into over 20 buildings, including a six-floor medical research laboratory, a library, public works spaces, warehouses, offices, and auxiliary laboratories and animal facilities.

Today NAMRU-3 is the largest overseas DOD biomedical research facility.

In honor of the 69<sup>th</sup> anniversary, NAMRU-3 Commanding Officer, Capt. John Gilstad, invited the Deputy Chief of Mission of the U.S. Embassy, Mr. Thomas Goldberger; and the Director of the Abbassia



*(Rear seated Left to Right) DCM Thomas Goldberger and Capt. John Gilstad. Front: HM2 Tony To and Mr. Mohamed Kamel cut the anniversary cake. (Photo taken by Rafi George)*

Fever Hospital, Dr. Amany Al Eman, represented by her assistant, Dr. Heba Mostafa, to attend a cake cutting ceremony with the laboratory's staff.

In full Navy tradition, the eldest member of the NAMRU-3 staff, Mr. Mohamed Kamal, who has worked as a medical research technician since 1972, cut the cake with the youngest member, newly reported HM1 Tony To.

As NAMRU-3 launches its 69<sup>th</sup> year of medical research, it continues to study, monitor and detect emerging

and re-emerging disease threats of military and public health importance, while developing mitigation strategies against these threats in CENTCOM, EUCOM and AFRICOM.

As a member of the U.S. Embassy country team in Egypt, NAMRU-3 represents the best of the partnership between the two nations in building the capacity of the Egyptian Ministry of Health to respond to disease outbreaks.



# Navy Medicine's Scientific Foundation

## *The Establishment of the Medical Research Institute* Part V

(continued from page 11)

In the inaugural year of NMRI, Mann would be assisted by Dr. Andrew C. Ivy, the institute's first scientific director (1942-1943). Ivy, a Northwestern University professor of physiology (and one of the most famous physicians in the country at the time), would later earn renown as one of the developers of the Nuremburg Medical Code, a set of research principles on human use experimentation.

Organized under four research departments—Naval Environmental Medicine, Naval Preventive Medicine, Dental Research and Equipment Research—NMRI's mission would become increasingly specialized.

In July 1943, the four research departments were reorganized into "facilities" for: animal laboratories; Aviation; Bacteriology; Biochemistry; Biophysics; Chemistry and Assay; Analysis; Experimental Dentistry; Diving and Underwater Physiology; Heating,

Air conditioning and Ventilation; Industrial Hygiene; a library; Nutrition; Pathology; Personal Equipment Design; Pharmacology and Toxicology; Physiology; Psychology and Statistics; Psychometric and Metabolism; Hematology; technical shops; Experimental Surgery, and Virology.

Research projects were classified into five categories: general (affecting the Navy as a whole), maritime medicine aboard surface vessels, submarine and diving medicine, aviation medicine and field medicine (U.S. Marine Corps).

By war's end NMRI's staff expanded to 81 officers and 125 enlisted personnel. Throughout World War II, NMRI investigated practically every problem relating to the health of Sailors and Marines.

NMRI scientists researched and developed everything from first aid kits for aviators, means of salination of seawater, protective creams for flashburns, sun burn

protection, protective clothing and armor, means of preventive medicine (including development of insect repellents and fungistatic agents), testing of Penicillin for peritonitis, prevention of general effects of cold water immersion, resuscitation devices, treatment for seasickness, transportation methods for whole blood, and research into tropical disease (including treatment for malaria, scrub typhus and schistosomiasis).

The Navy's Surgeon General Ross McIntire once outlined the Medical Department World War II mission as "...to maintain Naval tradition by keeping as many men at as many guns as many days as possible." There is no denying that through its vast output of basic and applied research, NMRI helped the Medical Department better achieve this mission.

## NAMRU-3 Presents at WHO-EMRO-sponsored Severe Acute Respiratory Illness Workshop

*Story courtesy of NAMRU-3 Public Affairs*

CAIRO – The U.S. Naval Medical Research Unit No. 3 (NAMRU-3) was asked to participate in a three-day workshop in December 2014, to train epidemiologists and virologists on integrating epidemiological and virological surveillance under the Pandemic Influenza Preparedness Framework. Attendees included WHO project officers from Egypt, Jordan, Lebanon, Yemen, Djibouti, Morocco, and Afghanistan.

Dr. Mayar Said, from the Virology and Zoonotic Disease Research Program and Lt. Cmdr. Rhonda Lizewski,

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NAMRU-3's Lt. Cmdr. Rhonda Lizewski and Dr. Mayar Said (seated second and third from right) attend the opening session of the Pandemic Influenza Preparedness Workshop. (Photo courtesy of WHO EMRO)

# Navy Lab Helps to Build a \$ 5.6 Million Research Center of Excellence in Peru

Story courtesy of NAMRU-6 Public Affairs



(Left to Right) San Marcos Rector, Dr. Pedro Cotillo, US Ambassador to Peru, Mr. Brian A. Nichols, Peru's Prime Minister, Ms. Ana Jara, CONCYTEC Director, Dr. Gisella Orjeda, and Dr. Manuel Sanchez, also from CONCYTEC. (Photo courtesy of NAMRU-6 Public Affairs)

LIMA, Peru - The Peruvian Science Council (CONCYTEC) recently awarded a Centers of Excellence Grant for Research, Development and Innovation to a consortium led by Universidad Nacional Mayor de San Marcos which was supported by the U.S. Naval Medical Research Unit No. 6 (NAMRU-6).

This consortium was the only winner out of 22 highly competitive applications and received US\$ 6.7 million, 5-year award focusing on biomedical and environmental health research and product development.

NAMRU-6 helped San Marcos with research proposals to study malaria, leishmaniasis and leptospirosis, and will play a technical advisory role in the biomedical component.

This grant is the largest ever awarded

by CONCYTEC and is the first of its kind in Peru, introducing a new partnership model between academia and businesses.

The award was presented to the consortium in a press conference, January 7, attended by the Peruvian Prime Minister, Ms. Ana Jara; the San Marcos Rector, Dr. Pedro Cotillo; the president of CONCYTEC, Dr. Gisella Orjeda, and the U.S. Ambassador to Peru, Mr. Brian A. Nichols.

Prime Minister Jara highlighted the critical role of a public university such as San Marcos to contribute to Peru's economic development through innovation, and technology transfer. Ambassador Nichols congratulated San Marcos for their leading role in biomedical research in Peru and emphasized that NAMRU-6 and the U.S. Embassy to Peru were proud

of the longstanding collaborative partnership with San Marcos.

NAMRU-6 Commanding Officer, Capt. Kyle Petersen, and Drs. Andres Lescano and Christian Baldeviano from NAMRU-6's Parasitology Department, also attended the press conference and congratulated San Marcos Principal Investigator Dr. Jorge Alarcon.

"This award is a testimony to the skills of outstanding Peruvian scientists such as Dr. Alarcon and to decades of collaboration between NAMRU-6's investigators and their local counterparts to build capacity in Peru," said Petersen. "Peru is beginning to develop a biotech industry which will better public health in the region and create highly skilled, high paying jobs and NAMRU-6 is proud to contribute to this effort."



# NAMRU-3 Presents at WHO-EMRO-sponsored Severe Acute Respiratory Illness Workshop

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from the Global Disease Detection and Response Program represented NAMRU-3.

Said gave a presentation on ongoing Severe Acute Respiratory Illness (SARI) surveillance conducted by NAMRU-3. Said was asked to discuss the future plans for this surveillance with the goal of enrolling Lebanon, Djibouti and Afghanistan in the surveillance program. Representatives from Morocco, Egypt, Jordan and Yemen (countries with established SARI surveillance) were also asked to present their experiences at the workshop.

As the laboratory coordinator for the Eastern Mediterranean Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) network, Said commented, "We are interested in the integration of epidemiologists and virologists and have established measurements for this integration. This integration is considered a pillar and the core of successful SARI surveillance."

Said went on to add that the workshop was successful in overcoming the historic resistance between epidemiologists and laboratorians.

"They now know that without the lab they cannot be effective," Said explained.

The participating countries set measurable indicators for monitoring the integration of epidemiology and laboratory components of surveillance in terms of visits to sentinel sites, sharing data, and holding follow-up meetings to monitor surveillance progress.

During the meeting, WHO project officers from Afghanistan, Djibouti and Lebanon requested assistance from NAMRU-3 to conduct assessments and training to establish SARI surveillance. As resources allow, NAMRU-3 will continue to support the Eastern Mediterranean Region counties.

## Greetings from the NMRC Ombudsman

Hello from the NMRC Ombudsman. I heard on the radio recently that most people will quit their New Year's resolution by the second week in February. So if you're still going strong, well done! For the rest of us... there's always next year! If a beach ready body wasn't good enough motivation for you this time, think about your heart health as a reason to stay fit and active.

The American Heart Association maintains that heart disease is the number one killer of women and men in the United States. According to the World Heart Federation, there are six main risk factors associated with heart disease:

- ♥ Tobacco use and exposure
- ♥ Obesity or overweight
- ♥ Physical inactivity
- ♥ High blood pressure
- ♥ High cholesterol
- ♥ Diabetes

The good news is that heart disease is entirely preventable through maintaining a health diet, exercise, and stress management. Look for new and fun ways to connect and stay active with your family or work colleagues. Dance with your kids

to their favorite songs or go for a walk or jog with your spouse. If you're at a desk job, instead of sending an email or making a phone call, get up and walk that flight of stairs every so often when you need to speak with a co-worker.

While I can't guarantee that you'll make the cover of a fitness magazine, little steps like these can help improve your heart health over time.

**Happy Heart Month from my Navy Family to yours,**

**Allison Norris**

## February is American Heart Health Month



Graphic illustration by Mikelle D. Smith, Naval Medical Research Center Public Affairs